4. Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contain only the method printArea() that prints the area of the given shape.

```
import java.util.Scanner;

abstract class Shape {
    int dim1;
    int dim2;

    public Shape(int dim1, int dim2) {
        this.dim1 = dim1;
        this.dim2 = dim2;
    }

    public abstract void printArea();
}

class Rectangle extends Shape {
    public Rectangle(int length, int width) {
        super(length, width);
    }


    public void printArea() {
        int area = dim1 * dim2;
        System.out.println("Area of rectangle: " + area);
    }
}

class Triangle extends Shape {
    public Triangle(int base, int height) {
        super(base, height);
    }


    public void printArea() {
        double area = 0.5 * dim1 * dim2;
        System.out.println("Area of triangle: " + area);
    }
}
```

```
class Circle extends Shape {
    public Circle(int radius) {
        super(radius, 0);
    }


    public void printArea() {
        double area = Math.PI * dim1 * dim1;
        System.out.println("Area of circle: " + area);
    }
}

class ShapeDemo {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter length and breadth of rectangle:");

        int d1;
        d1 = sc.nextInt();
        int d2;
        d2 = sc.nextInt();

        Rectangle r1 = new Rectangle(d1, d2);
        r1.printArea();

        System.out.println("Enter base and height of triangle");
        d1 = sc.nextInt();
        d2 = sc.nextInt();
        Triangle t1 = new Triangle(d1, d2);
        t1.printArea();

        System.out.println("Enter radius");
        d1 = sc.nextInt();
        Circle c1 = new Circle(d1);
        c1.printArea();
    }
}
```

```
C:\Users\sammj\OneDrive\Desktop\JAVA LAB\lab 4>java ShapeDemo
Enter length and breadth of rectangle:
10 20
Area of rectangle: 200
Enter base and height of triangle
10 25
Area of triangle: 125.0
Enter radius
5
Area of circle: 78.53981633974483
```

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4 Develop a java program to create an abstract class named shape that contains two integers and an empty method named printArea(), provide three class name rectangle, triangle, and circle such that each one of the class extends the class shape. Each one of the class contains only ~~one~~ the method printArea()

```
import java.util.Scanner;

abstract class shape
{
    int dim1;
    int dim2;

    public shape()
    {
        this.dim1 = dim1;
        this.dim2 = dim2;
    }

    public abstract void printArea();
    {
    }
}
class Rectangle extends shape
{
    public Rectangle (int length, int width)
    {
        dim1 = length;
        dim2 = width;
    }
    public void printArea()
    {   int area = dim1 * dim2;
        System.out.println(" Area of rectangle " +area);
    }
}
```

```
class triangle extends shape
{
    public triangle (int base, int height)
    {
        dim1 = base;
        dim2 = height;
    }
    public void printArea()
    {
        double area = 0.5 * dim1 * dim2;
        System.out.println("Area of triangle : "+area);
    }
}

class circle extends shape
{
    public circle (int radius)
    {
        dim1 = radius;
        dim2 = 0;
    }
    public void printArea()
    {
        double area = Math.pi*dim1*dim1;
        System.out.println("Area of circle : "+area);
    }
}
class shapedemo
{
    public static void main (String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter length and breadth of rectangle");
```

```
int d1 = sc.nextInt();
int d2 = sc.nextInt();
Rectangle r1 = new Rectangle(d1, d2);
r1.printArea();

System.out.println("Enter base and height of triangle");
d1 = sc.nextInt();
d2 = sc.nextInt();
Triangle t1 = new Triangle(d1, d2);
t1.printArea();

System.out.println("Enter radius");
d1 = sc.nextInt();
Circle c1 = new Circle(d1);
c1.printArea();
    }
}
```

Output

Enter length and Breadth of Rectangle
10 12
Area of Rectangle 120
Enter Base and Height of Triangle
12 24
Area of Triangle 144.0
Enter radius of Circle
12
Area of Circle 452.304

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